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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	**Applicant(s)**
Office Action Summary	10/719,819	POTAPOV ET AL.
	Examiner	**Art Unit**	
	PATRICK A. DARNO	2163	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>09 June 2008</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-2, 4-18, 20-32, and 34-47</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-2, 4-18, 20-32, and 34-47</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>20 November 2003</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   No new claims were added. Claims 3, 19, and 33 are cancelled. Claims 1, 13, 34, and

38-39 are amended. Claims 1-2, 4-18, 20-32, and 34-47 are pending in this office action.

Claim Rejections - 35 USC § 102

        The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on
> sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-2, 4-18, 20-32 and 34-47 are rejected under 35 U.S.C. 102(b) as being

anticipated by International Publication Number WO 01/33427 issued to Raymond Roccaforte

(hereinafter "Roccaforte").

Claim 1:

        Roccaforte a machine implemented method comprising:

        accessing rows in a database table *(Roccaforte: page 7, lines 6-7 and page 1, line 23 - page 2, line 4*

and page 8, lines 3-5) wherein:

        each row in the database table corresponds to a dimension-value combination for a set of

one or more of dimensions *(Roccaforte: page 2, lines 13-17 and page 3, lines 9-14 and page 4, lines 14-17 and*

page 6, line 18 – page 7, line 3 and page 7, lines 11-14 and page 7, lines 16-17; The "replacement value" is a value

that is derived from "any given combination of foreign key values." This "replacement value is equivalent to the

claimed "dimension-value combination.");

the database table is composed of a plurality of segments *(Roccaforte: Figs. 2-3[1] and page 4, lines 21-23 and/or Fig. 1)* (a) wherein each segment of the plurality of segments corresponds to a different contiguous range of dimension-value combinations *(Roccaforte: page 29, lines 9-11 and page 29, lines 20-23 and page 4, lines 21-23 and/or Fig. 1; Note specifically the "tiling ranges".)* and (b) includes a different set of one or more row, wherein at least one segment of the plurality of segments includes multiple rows *(Roccaforte: Figs. 2 and 3; These figures shows a plurality of segments (tiles) comprising multiple rows.)*;

the boundaries of each segment, of the plurality of segments, are established based on gaps in dimension-value combinations associated with rows stored in the database table *(Roccaforte: page 29, lines 9-11 and page 31, lines 1-6; The first reference cited here (page 29) clearly shows that boundaries ("tiling ranges" for dimensions) are established based on dimension values. The second reference (page 31) clearly shows wherein the boundaries are based on "gaps" in the dimension values. For example, page 31 shows wherein one dimension is "city-level" and another dimension is "state-level". Furthermore, it shows that the database table can be "subdivided" along this gap between "city-level" dimensions and "state-level" dimensions".)*;

the segment into which a row of the database table is stored is the segment that corresponds to the contiguous range that includes the dimension-value combination to which the row corresponds *(Roccaforte: page 29, lines 9-11 and Figs. 2-3 and page 4, lines 21-23 and/or Fig. 1)*;

within each segment of the plurality of segments, rows of the database table are stored at locations based on the dimension-value combination to which the rows correspond *(Roccaforte: page 29, lines 9-19 and page 30, lines 5-8 and page 4, lines 21-23 and/or Fig. 1 and page 8, lines 3-5)*; and

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[1] For the remainder of this office action, a citation presented in bold indicates a citation given that has been substantially changed since the Examiner's previous office action.

wherein accessing rows in the database table includes, in response to receiving a request

that indicates a particular dimension-value combination *(Roccaforte: page 1, lines 12-18 and column 4,*

lines 15-18 and page 7, lines 18-19 and page 8, lines 3-5):

using the particular dimension-value combination for determining a segment of the

plurality of segments that stores a particular row that corresponds to the particular dimension-

value combination *(Roccaforte: page 1, lines 12-18 and column 4, lines 15-18 and page 7, lines 18-19 and page*

8, lines 3-5); and

accessing the particular row within the segment *(Roccaforte: page 1, lines 12-18 and column 4,*

lines 15-18 and page 7, lines 18-19 and page 8, lines 3-5).

Claim 2:

Roccaforte discloses all the elements of claim 1, as noted above, and Roccaforte further

discloses wherein the database table does not include columns for storing values for the one or

more dimensions *(Roccaforte: page 15, lines 15-18; This cited portion of Roccaforte is now reproduced for*

convenience. "The size of a fact table may be reduced by not storing in the fact table the dimension key

values that are associated with each cell value. According to one embodiment, tile_number-offset

combinations are stored in the fact table in place of the foreign key values.").

Claim 5:

Roccaforte discloses all the elements of claim 1, as noted above, and Roccaforte further

discloses wherein sizes of the plurality of segments and locations contained within the plurality

of segments are allocated according to a density of discontinuities in ranges of dimension value

combinations *(Roccaforte: page 21, lines 1-8)*.

Claim 12:

Roccaforte discloses all the elements of claim 1, as noted above, and Roccaforte further discloses wherein each of the plurality of segments is divided into one or more blocks of equal size *(Roccaforte: page 29, lines 6-11 and Fig. 2).*

Claim 13:

Roccaforte discloses all the elements of claim 1, as noted above, and Roccaforte further discloses wherein the accessing the rows in the database table is also performed by at least accessing a table having an identification of a dimension value of a reference location included in the block from which offsets are calculated to other locations *(Roccaforte: page 27, lines 12-24).*

Claim 14:

Roccaforte discloses all the elements of claim 13, as noted above, and Roccaforte further discloses wherein the reference location is an index value of a first of location within a segment that stores rows for a contiguous range of dimension value combinations *(Roccaforte: page 27, lines 12-16 and Fig. 2).*

Claim 15:

Roccaforte discloses all the elements of claim 13, as noted above, and Roccaforte further discloses wherein the table having the identification is a B-tree index *(Roccaforte: page 27, lines 23-24).*

Claim 16:

Roccaforte discloses all the elements of claim 13, as noted above, and Roccaforte further discloses wherein the table having the identification is a bit map index *(Roccaforte: page 27, lines 23-24).*

Claim 17:

     Claim 17 is rejected under the same reasons set forth in the rejection of claim 1, and further in view of the Roccaforte reference which further discloses a computer readable storage medium storing one or more sequences of instructions, which when executed by one or more processors causes the one or more processors to perform the method recited in claim 1 *(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5)*.

Claim 18:

     Claim 18 is rejected under the same reasons set forth in the rejection of claim 2, and further in view of the Roccaforte reference which further discloses a computer readable storage medium storing one or more sequences of instructions, which when executed by one or more processors causes the one or more processors to perform the method recited in claim 2 *(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5)*.

Claim 21:

     Claim 21 is rejected under the same reasons set forth in the rejection of claim 5, and further in view of the Roccaforte reference which further discloses a computer readable storage medium storing one or more sequences of instructions, which when executed by one or more processors causes the one or more processors to perform the method recited in claim 5 *(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5)*.

Claim 28:

     Claim 28 is rejected under the same reasons set forth in the rejection of claim 12, and further in view of the Roccaforte reference which further discloses a computer readable storage medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 12

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 29:

     Claim 29 is rejected under the same reasons set forth in the rejection of claim 13, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 13

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 30:

     Claim 30 is rejected under the same reasons set forth in the rejection of claim 14, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 14

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 31:

     Claim 31 is rejected under the same reasons set forth in the rejection of claim 15, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 15

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 32:

Claim 32 is rejected under the same reasons set forth in the rejection of claim 16, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 16

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 34:

Roccaforte discloses a computer-readable storage medium that is readable by a database

system *(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5)*, having

stored therein at least:

a database table containing a plurality of data items on the computer readable media that

correspond to locations associated with at least one dimension value *(Roccaforte: page 27, lines 17-*

24);

wherein each data item of the plurality of data times is stored in the table in an order

dictated by a dimension value combination to which said each data item corresponds *(Roccaforte:*

page 4, lines 21-23; Note specifically that the rows (data items) in the fact table are sorted based upon the dimension

value combination (replacement value). This is clearly disclosed when Roccaforte recites that the replacement value

(dimension value combination) is used as the "sort key".), wherein the dimension value combination, to

which said each data item corresponds, corresponds to one or more dimension columns defined

for the database table *(Roccaforte: page 4, lines 14-18 and page 6, line 18 – page 7, line 3 and page 2, lines 13-*

17); and

wherein the database table does not store values for, or that are derived from dimension

values associated with, the one or more dimension columns (*Roccaforte: page 15, lines 15-18; This*

cited portion of Roccaforte is now reproduced for convenience. "***The size of a fact table may be reduced by not***

storing in the fact table the dimension key values that are associated with each cell value. *According to*

one embodiment, tile_number-offset combinations are stored in the fact table in place of the foreign key values.").

Claim 35:

Roccaforte discloses all the elements of claim 34, as noted above, and Roccaforte further

discloses wherein all of the locations of the database table that are associated with non-null

dimension values are organized into one or more segments (*Roccaforte: See at least Fig. 1; Note that all*

the locations of the database fact table storing non-null values are organized into segments comprising rows,

columns, and cells.), each segment including a contiguous region of data without discontinuities in

the dimension values (*Roccaforte: Fig. 1; Fig. 1 clearly shows a data table without any discontinuities from*

amount $234.56 to $769.34. The ellipses in the figure is simply shown so that all the contiguous data rows did not

need to be reproduced.).

Claim 36:

Roccaforte discloses all the elements of claim 35, as noted above, and Roccaforte further

discloses wherein the table has associated with it at least one dimension value combination

(*Roccaforte: page 6, line 19 – page 7; Note that the fact table is associated with at least one "replacement value"*

(dimension value combination).):

that is associated with a null value (*Roccaforte: page 19, lines 3-6; Note that the fact table can include rows of*

NULL values. Therefore, the at least one dimension value combination (replacement value) is associated with a

NULL value by at least the fact that both the NULL value and the replacement value (dimension value combination)

are stored in the same table.); and

that is not included in any of the one or more segments *(Roccaforte: page 19, lines 3-6; And finally, note*

that the replacement values (dimension value combination) are not stored in any of the segments (cells) of the table

where the values are NULL.).

Claim 37:

Roccaforte discloses all the elements of claim 36, as noted above, and Roccaforte further

discloses another table storing identifier for determining the locations stored within each segment

of the one or more segments *(Roccaforte: page 19, line 11 – page 20, line 5; Note specifically the IOT (Index-*

Only Table.)).

Claim 38:

Claim 38 is rejected under the same reasons set forth in the rejections of claims 1 and 17.

Claim 4:

Roccaforte discloses all the elements of claim 38, as noted above, and Roccaforte further

discloses a method further comprising:

creating the index *(Roccaforte: page 27, lines 8-18)*; and

locating the entry is based in part on information contained in the entry that corresponds

to the segment that contains the particular row *(Roccaforte: page 11, lines 22-25; Note that locating an*

entry is based, at least in part, on information (tile coordinate value) that corresponds to the segment (tile) that

contains the row.).

Claim 6:

Roccaforte discloses all the elements of claim 38, as noted above, and Roccaforte further discloses wherein:

the index is an indexed organized table *(Roccaforte: page 19, lines 11-17)*;

and locating the entry is based at least in part on information contained in the entry that corresponds to the segment that contains the row *(Roccaforte: page 11, lines 22-25; Note that locating an entry is based, at least in part, on information (tile coordinate value) that corresponds to the segment (tile) that contains the row.).*

Claim 7:

Roccaforte discloses all the elements of claim 6, as noted above, and Roccaforte further discloses wherein the index organized table includes non-key information used for determining locations of gaps in ranges of dimension value combinations that are between segments *(Roccaforte: page 19, lines 3-6 and page 21, lines 6-14; Note that the offsets in the references cited are used in order to bypass gaps of dimension value combinations (replacement values) having a null value between segments of rows that are populated with data. In order to have and utilize this information allowing for the bypassing of the these gaps of null values, the system must have first determined where the gaps of null values were located, and then calculate the appropriate offset to skip such gaps.).*

Claim 8:

Roccaforte discloses all the elements of claim 6, as noted above, and Roccaforte further discloses wherein at least one of the plurality of segments includes more than one contiguous range of dimension value combinations *(Roccaforte: page 19, lines 3-6 and page 10, lines 7-11; The first reference shows that there can be gaps of null values between populated rows in a particular segment (tile). The*

second reference shows that rows are sorted by dimension value combinations (replacement values)...which clearly

discloses at least one guaranteed contiguous range of replacement values (dimension value combinations). So that

leads to the conclusion that when there is a tile (segment) which has a gap of null values, there exists more than one

contiguous range of dimension value combinations (replacement values). One contiguous range exits before the gap

of null values and one contiguous range after the gap of null values. As a final note, the Examiner would like to

point out that with respect to claim 8, "contiguous range" of values is being interpreted as a continuing range of

sorted values. If the next value is not in the sorted order (as is the case with a null value), then that value breaks the

contiguous sequence.).

Claim 9:

Roccaforte discloses all the elements of claim 6, as noted above, and Roccaforte further

discloses wherein at least one of the plurality of segments includes more than one contiguous

range of dimension value combinations that are joined together by at least one dummy entry in

the table, therein forming one contiguous range of dimension value combinations (*Roccaforte: page*

19, lines 3-6 and page 10, lines 7-11 and Fig. 2; Note, that the null value rows are a dummy row that ensures that

at least two ranges of sorted dimension values combined into one "contiguous range" of dimension values

(replacement values). Also, note that with respect to claim 9, "contiguous range" is being interpreted as entries that

are located next to one another or adjacent to one another.).

Claim 10:

Roccaforte discloses all the elements of claim 6, as noted above, and Roccaforte further

discloses wherein the at least two of the plurality of segments are each divided into blocks

having a block size, and the block size of a first of the at least two of the plurality of segments is

different from the block size of a second of the at least two of the plurality of segments

(*Roccaforte: page 31, lines 5-6 and Fig. 2; Note that the tiles can be created with a "variable width." This appears to*

indicate that there can be two tiles (blocks) of different size. In direct contrast, Fig. 2 shows an example where the

tiles (blocks) are of equal size.).

Claim 11:

Roccaforte discloses all the elements of claim 6, as noted above, and Roccaforte further

discloses wherein the indexed organized table includes an identification of a reference location

for each segment of the plurality of segments from which offsets from the reference location are

calculated to reach other locations in each of the segments *(Roccaforte: page 21, lines 9-14 and page 27,*

lines 14-16).

Claim 20:

Claim 20 is rejected under the same reasons set forth in the rejection of claim 4, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 4 *(Roccaforte:*

page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 22:

Claim 22 is rejected under the same reasons set forth in the rejection of claim 6, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 6 *(Roccaforte:*

page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 23:

Claim 23 is rejected under the same reasons set forth in the rejection of claim 7, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 7 *(Roccaforte:*

page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 24:

Claim 24 is rejected under the same reasons set forth in the rejection of claim 8, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 8 *(Roccaforte:*

page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 25:

Claim 25 is rejected under the same reasons set forth in the rejection of claim 9, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 9 *(Roccaforte:*

page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 26:

Claim 26 is rejected under the same reasons set forth in the rejection of claim 10, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 10

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 27:

Claim 27 is rejected under the same reasons set forth in the rejection of claim 11, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 11

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 43:

Claim 43 is rejected under the same reasons set forth in the rejection of claim 38, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 38

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 39:

Roccaforte discloses a machine-implemented method comprising:

determining a plurality of ranges based on dimension-value combinations to which rows

in a table correspond *(Roccaforte: page 8, lines 24-25 and page 9, lines 8-10 and page 9, lines 10-12; Note that*

the whole fact table is divided into plurality of tiles. Also note that each tile contains a certain amount of rows

which is based upon a range of a "particular set of coordinates" (Roccaforte: page 9, lines 10-12). These coordinates

must have been calculated or determined in some way.);

wherein each range of the plurality of ranges is a different range of dimension-value

combinations for a set of one or more dimensions *(Roccaforte: page 9, lines 19-21; Note that the*

"coordinate values" are created by mapping the dimension value combinations (replacement values) into a certain

coordinate value. A series of coordinate determines a range of dimension value combinations (replacement values)

belonging to each tile.);

wherein each row in the table corresponds to a dimension-value combination *(Roccaforte:*

page 9, line 1 and page 9, lines 19-21 and page 10, lines 7-11);

wherein the plurality of ranges is determined such that the table includes rows that

correspond to every dimension-value combination that belongs to each range of the plurality of

ranges *(Roccaforte: page 9, line 1 and page 9, lines 19-25)*;

wherein the boundaries of each range, of the plurality of ranges, are determined based on

gaps in dimension-value combinations associated with rows stored in the database table

*(Roccaforte: **page 29, lines 9-11 and page 31, lines 1-6**; The first reference cited here (page 29) clearly shows that*

boundaries ("tiling ranges" for dimensions) are established based on dimension values. The second reference (page

31) clearly shows wherein the boundaries are based on "gaps" in the dimension values. For example, page 31 shows

wherein one dimension is "city-level" and another dimension is "state-level". Furthermore, it shows that the

database table can be "<u>subdivided</u>" along this gap between "city-level" dimensions and "state-level" dimensions".);

for each range of the plurality of ranges, creating a segment that stores only rows, from

the table, that have dimension-value combinations that fall within the range that corresponds to

said each segment *(Roccaforte: page 9, line 1 and page 9, lines 19-25 and Fig. 2).*

Claim 40:

Roccaforte discloses all the elements of claim 39, as noted above, and Roccaforte further

discloses storing rows, within each segment, in an order that is based on the dimension-value

combination of the rows *(Roccaforte: Fig. 2 and page 10, lines 7-11)*.

Claim 41:

Roccaforte discloses all the elements of claim 39, as noted above, and Roccaforte further

discloses wherein the rows do not include columns for storing dimension-value combinations

(Roccaforte: see at least page 27, lines 18-19 and page 28, lines 3-5).

Claim 42:

Roccaforte discloses all the elements of claim 39, as noted above, and Roccaforte further

discloses creating an index that includes a single entry for each segment *(Roccaforte: page 27, lines 8-*

18).

Claim 44:

Claim 44 is rejected under the same reasons set forth in the rejection of claim 39, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 39

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 45:

Claim 45 is rejected under the same reasons set forth in the rejection of claim 40, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 40

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 46:

Claim 46 is rejected under the same reasons set forth in the rejection of claim 41, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 41

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Claim 47:

Claim 47 is rejected under the same reasons set forth in the rejection of claim 42, and

further in view of the Roccaforte reference which further discloses a computer readable storage

medium storing one or more sequences of instructions, which when executed by one or more

processors causes the one or more processors to perform the method recited in claim 42

(Roccaforte: page 43, line 14 – page 44, line 2 and page 44, line 12 - page 45, line 18 and Fig. 5).

Response to Arguments

Applicant Argues:

At least the above-bolded feature of Claim 1 is not taught or suggested by *Roccaforte*. That feature of

Claim 1 recites: "the boundaries of each segment, of the plurality of segments, are established based on gaps in

dimension-value combinations associated with rows stored in the database table." A tile of *Roccaforte* is the most

analogous element to the segment of Claim 1. [emphasis in original]

Claim 39 further recites that the recited "plurality of ranges is determined such that the table includes rows

that correspond to **every dimension-value combination** that belongs to each range of the plurality of ranges". the

cited portion of Roccaforte (i.e., page 9, lines 1 and 19-25) fails to teach or suggest that a plurality of ranges of

dimension-value combinations is determined in such a way. [emphasis in original]

Examiner Responds:

     Examiner is not persuaded. The Examiner asserts that Roccaforte discloses wherein "the

boundaries of each segment, of the plurality of segments, are established based on gaps in

dimension-value combinations associated with rows stored in the database table" [Roccaforte:

page 29, lines 9-11 and page 31, lines 1-6].

     Specifically, the first reference cited here [Roccaforte: page 29, lines 9-11] clearly shows that

boundaries ("tiling ranges" for dimensions) are established based on dimension values. The

second reference [Roccaforte: page 31, lines 1-6] clearly shows wherein the boundaries are based on

"gaps" in the dimension values. For example, Roccaforte: page 31 shows wherein one

dimension is "city-level" and another dimension is "state-level". Furthermore, it shows that the

database table can be "subdivided" along this difference in dimension values between "city-

level" dimensions and "state-level" dimensions". The Examiner sets forth that this sub-division

between different categories of dimension values is a sub-division of segments (tiles) based

upon "gaps" in dimension values. In this case the "gap" arises in the switching from a first type

of dimension value to a second type of dimension value.

     The same explanation for maintaining the rejection of claim 1 also applies to the reason

the rejection of claim 39 is upheld.

Since it appears that each and every element of the Applicant's claimed invention is

either disclosed or suggested by the prior art of record, the claims remain rejected under the

reasons set forth in the preceding office action.

Applicant Argues:

Present Claim 34 recites:

A computer-readable storage medium that is readable by a database system,

having stored therein at least:

a database table containing a plurality of data items on the computer readable

> media that correspond to locations associated with at least one dimension
> value;

wherein each data item of the plurality of data items is stored in the table in an
> order dictated by a dimension value combination to which said each data
> item corresponds, wherein the dimension value combination, to which
> said each data item corresponds, corresponds to one or more dimension
> columns defined for the database table; and

wherein the database table does not store values for, or that are derived
> **from dimension values associated with, the one or more dimension**
> **columns.** [emphasis in original]

At least the above-bolded feature of claim 34 are not taught or suggested by *Roccaforte*. In contrast to
Claim 34, the fact table of *Roccaforte* stores replacement values, which are derived from dimension values
associated with one or more dimension columns. [emphasis in original]

Examiner Responds:

Examiner is not persuaded. The Examiner asserts that Roccaforte discloses "wherein the

database table does not store values for, or that are derived from dimension values associated

with, the one or more dimension columns" (Roccaforte: page 15, lines 15-18).

The actual text of Roccaforte recites, "[t]he size of a fact table may be reduced by not

storing in the fact table the dimension key values that are associated with each cell value.

According to one embodiment, tile_number-offset combinations are stored in the fact table in place of the foreign key values."

From the reference, it is clear that the dimension key values are not stored in the fact table. Furthermore, the tile_number-offset combinations are values that are not derived from the dimension key value, but rather they [the tile_number-offset combinations] appear to be derived from the location or position of an item in a database table.

Since it appears that each and every element of the Applicant's claimed invention is either disclosed or suggested by the prior art of record, the claims remain rejected under the reasons set forth in the preceding office action.

Prior Art of Record

The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure is listed below:

Graefe et al.   U.S. Patent No. 6,298,342

Contact Information

3.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICK A. DARNO whose telephone number is (571)272-0788. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

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like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hung T Vy/   /Patrick A. Darno/
Acting SPE of Art Unit 2163   Examiner
                                                        Art Unit 2163
                                                        06-22-2008